REMARKS

In response to the Office Action dated November 21, 2002, claims 1, 7, 8 and 10 are amended. Claims 1-10 are now active in this application. No new matter has been added.

A drawing correction is proposed for FIGS. 1, 2, 4 and 6 to address the objections to the drawings noted in sections 1) and 2) of the official action. A separate paper requesting approval is submitted concurrently herewith.

The Examiner is requested to note the correct Attorney Docket No. as 50195-279 and to correct the USPTO records accordingly.

REJECTION OF CLAIMS UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Claims 1-10 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. In support of this position, the Examiner maintains that there is insufficient antecedent basis for "the first and second fixing portions" in claims 1 and 10, and in claim 7, it is unclear what the recited dimensions are. By this response, each of the noted points of indefiniteness has been appropriately addressed. Specifically, non-sequiturs are eliminated and confusing and/or vague language deleted in favor of language believed to recite the invention with the degree of precision and particularity required by the statute. In addition, the specification is amended to add clarifying description to the present application. Applicants believe that no new matter is added by the Amendment of Drawings and by the support sentences adding clarifying description. Therefore, it is respectfully urged that the rejection be withdrawn.

REJECTION OF CLAIMS UNDER 35 U.S.C. § 103

I. Claims 1-6 and 8-10 are rejected under 35 U.S.C. §103(a) as being unpatentable over Herron in view of Cuenot et al. (hereinafter, Cuenot) and Mitsui.

Claim 7 is rejected under 35 U.S.C. §103(a) as being unpatentable over Herron in view of Cuenot and Mitsui, and further in view of Yamamoto.

The Examiner states that Herron and Cuenot do not show a plurality of first contoured fixing portions provided with each outer end surface of the annular laminated stack and a plurality of second contoured fixing portions provided with an inner surface of each of the annular end plates, and that Mitsui shows each outer end surface of the steel sheets having a plurality of first contoured fixing portions (22) and an inner-surface of each of the steel sheets having a plurality of second fixing portions.

By this response, claims 1, 7, 8 and 10 are amended to more clearly delineate subject matter that is not disclosed in Mitsui. In the amended claims, the concrete shapes of the first and second fixing portions are further limited. In particular, amended claims 1 and 10 feature that each outer end surface of the annular laminated stack has a plurality of first fixing portions formed in one of substantially "triangular (7a' and 7b') and trapezoidal (7a" and 7b")-shapes", and the annular end plates have a plurality of second fixing portions formed in one of substantially "triangular and trapezoidal-shapes" (see Figs. 4 and 5).

Mitsui discloses finger-shaped fixing portions (fingers 20) having holes (15). Thus, Mitsui does not disclose "triangular-shaped" fixing portions now recited in amended independent claims 1 and 10. At first glance, fixing portions (20) of Mitsui may seem to be similar to the "trapezoidal-shaped" fixing portions (7a" and 7b") of Fig. 5 of the present invention. However, there is a difference between the fixing portions (7a" and 7b") of Fig. 5 and the finger-shaped fixing portions (20) of Mitsui, as fixing portions (20) of Mitsui have holes (15).

Applicants wish to emphasize that these two differences are quite important for the following reasons:

(1) The triangular-shaped first and second fixing portions enable the annular laminated stack and annular end plates to couple more smoothly than do the shapes of the fixing portions of Mitsui.

(2) The holes (15) are used for the insertion of caulking bolts. Thus, in the invention of Mitsui, the fixing process is carried out by the caulking bolts at the same place of the caulking process. On the other hand, in the present invention, the fixing process is carried out by the C-ring, as recited by claim 2, at different place of the caulking process. Clearly, the present invention makes positioning control easier than does the invention of Mitsui

It is noted also that the fixing portion of Yamamoto has rectangular-shape.

Furthermore, dependent claims 2-9 play an important role in compensation of fixing (and caulking) strength. In particular, the numerical limitations of claims 6 and 7 depend on the concrete shape of the first and second fixing portions. Thus, the numerical limitations are clearly not obvious over the applied prior art references, which do not disclose or suggest such numerical.

In view of the above, amended independent claims 1 and 10, as well as dependent claims 2-9, are patentable over Herron, Cuenot, Mitsui and Yamamoto considered alone or in combination.

II. Claims 1 and 10 are rejected under 35 U.S.C. §103(a) as being unpatentable over Applicant's admitted prior art (FIGS. 1 and 2) in view of Herron.

However, neither Applicant's admitted prior art (FIGS. 1 and 2) nor Herron, considered alone or in combination, disclose or suggest the features now recited in amended claims 1 and 10.

III. In view of the above, the allowance of claims 1-10, as amended, is respectfully solicited.

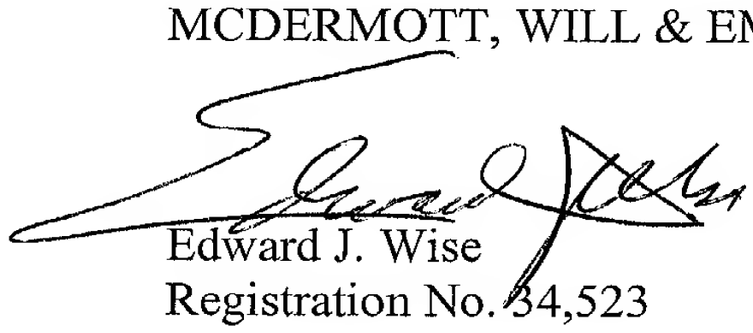
CONCLUSION

Accordingly, it is urged that the application, as now amended, is in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

MCDERMOTT, WILL & EMERY



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VERSION WITH MARKINGS SHOWING CHANGES MADE

IN THE SPECIFICATION:

Please amend the specification as follows:

At 6, the second full paragraph:

In the illustrated embodiment of FIG. 4, the annular end plates 1a, 1b are coupled to the annular laminated stack 2 by caulking at the second fixing means of the annular end plates 1a, 1b and the first fixing means of the annular laminated stack 2. The first fixing means of the annular laminated stack 2 is formed in a plurality of triangular-shaped profiles in an axial direction of the rotor shaft, and is formed in a plurality of rectangular-shaped profiles on each electromagnetic sheet plate that are located at circumferentially spaced locations (in detail as shown in FIG. 6). The presence of the caulked portions each formed in the triangular profile in the axial direction of the rotor shaft and the rectangular profile on each electromagnetic sheet plate renders the fabrication step to be easily implemented while ensuring a sufficient rigidity. Preferably, the rectangular profile may be designed to have a dimensional range composed of first and second dimensional elements such as a height or width (1_1 or 1_2 as shown in FIG 6) of more than 1 mm and the width or the height (1_1 or 1_2 as shown in FIG 6) of more than 2 mm. With such a dimensional range of the rectangular profile, the annular laminated stack 2 may be caulked without causing an increased number of caulking portions while preventing an imbalance in shape of the annular laminated stack 2 and ensuring the strength at the caulked portions. Each of the caulked portions may be preferably designed in the dimensional range to have the dimensional elements such as the height of approximately one to two times 1 the thickness of each steel plate in an axial direction of the rotor shaft. With such a dimensional range of each of the caulked portions, likewise, the annular laminated stack 2 may be caulked without causing the

increased number of caulking portions while preventing the imbalance in shape of the annular laminated stack 2 and ensuring the strength at the caulked portions.

At page 8, the first full paragraph:

Further, the caulked portions may be suitable located in a circumferential area distanced from an inner circumferential periphery of each electromagnetic steel sheet by 7 to 30 % (7 (1/L) x 100 30, in detail as shown in FIG. 4) a radial length of each electromagnetic steel sheet relative to an outer circumferential periphery thereof. By forming the caulked portions in such a circumferential area, the strength, provided by the caulked portions, of the electromagnetic steel sheet can be increased to minimize a deformation of the rotor, for thereby improving the operating performance of the motor. When forming the caulked portions outside the circumferential area in a range greater than 30 %, the operating performance of the motor is adversely affected and, when forming the caulked portions inside the circumferential area in a range below 7 %, the strength, provided by the caulked portions of the electromagnetic steel sheet tends to have a decreased value. In FIG. 6, further, although each of the caulked portions has been shown as an elongated shape in a circumferential direction, each caulked portion may [extends] extend in the elongated shape in the radial direction of the electromagnetic steel sheet or the electromagnetic steel sheet may have caulked portions extending in mixed orientations.

IN THE CLAIMS:

Please amend claims 1, 7, 8 and 10 as follows:

1. (Amended) A rotor structure for a permanent-magnet motor, comprising:

an annular laminated stack of electromagnetic steel sheets incorporating therein permanent magnets;

a pair of annular end plates between which the annular laminated stack is sandwiched;

a cylindrical core buck having its outer circumferential periphery carrying thereon the annular laminated stack and the annular end plates; and

a rotor shaft integrally connected to the cylindrical core buck to be rotatable therewith;

wherein each outer end surface of the annular laminated stack has a plurality of first [contoured] fixing portions formed in one of substantially triangular and trapezoidal-shapes, and an inner surface of each of the annular end plates has a plurality of second [contoured] fixing portions formed in one of substantially triangular and trapezoidal-shapes; and

wherein the annular laminated stack and the annular end plates are fixedly coupled to one another by caulking at the plurality of first and second fixing portions formed in one of substantially triangular and trapezoidal-shapes.

7. (Amended) The rotor structure according to claim 6, wherein each of the first fixing portions of the annular laminated stack is formed in a rectangular shape on each electromagnetic sheet plate which has a [first dimensional element] side of more than 1 mm and [a second dimensional element] another side of more than 2 mm, and wherein each of the first fixing portions formed in one of substantially triangular and trapezoidal-shapes has a height [with a third dimensional element of a value] equal to one to two times the thickness of each electromagnetic steel plate.

8. (Amended) The rotor structure according to claim 1, wherein each of the second [contoured] fixing portions of the annular end plate has substantially the same dimensional size as that of each of the first [contoured] fixing portion of the annular laminated stack.

10. (Amended) A rotor structure for a magnet motor, comprising:

an annular laminated stack of electromagnetic steel plates incorporating therein permanent magnets;

annular means holding the annular laminated stack at both sides thereof in a fixed place;

cylindrical means carrying thereon the annular laminated stack and the annular means; and

a rotor shaft integrally connected to the cylindrical means to be rotatable therewith;

wherein each outer end surface of the annular laminated stack has a plurality of first [contoured] fixing portions formed in one of substantially triangular and trapezoidal-shapes, and the annular means has a plurality of second [contoured] fixing portions formed in one of substantially triangular and trapezoidal-shapes ; and

wherein the annular laminated stack and the annular means are fixedly coupled to one another by caulking at the plurality of first and second fixing portions formed in one of substantially trapezoidal or triangular-shapes.